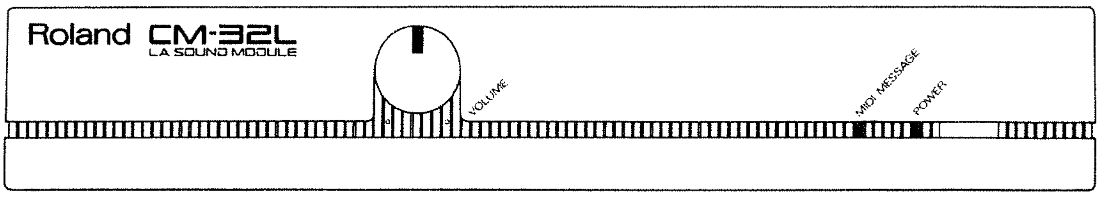
Roland

LA SOUND MODULE

CM-32L

OWNER'S MANUAL



For the U.K.

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

BLUE : NEUTRAL
BROWN : LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

For West Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

LA SOUND MODULE CM-32L

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046/1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Roland Corporation Osaka/Japan

Name des Herstellers/Importeurs

For the USA

RADIO AND TELEVISION INTERFERENCE

WARNING — This equipment has been verified to comply with the limits for a Class B computing device, pursuant to Subpart J, of Part 15, of FCC rules. Operation with non-certified or non-verified equipment is likely to result in interference to radio and TV reception.

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J, of Part 15, of FCC Rules. These rules are designed to provide reasonable protection against such a interference in a rasidential installation. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by the following measure:

- Disconnect other devices and their input/output cables one at a time. If the interference stops, it is caused by either the other device or its I/O cable.
  These devices usually require Roland designated shielded I/O cables. For Roland devices, you can obtain the proper shielded cable from your dealer. For non Roland devices, contact the manufacturer or dealer for assistance.
  If your equipment does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures.
- Turn the TV or radio antenna until the interference stops.
- Move the equipment to one side or the other of the TV or radio.
- Move the equipment farther away from the TV or radio.
- Plug the equipment into an outlet that is on a different circuit than the TV or radio. (That is, make certain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV. If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission:
  "How to Identify and Resolve Radio — TV Interference Problems"
  This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4

For Canada

CLASS B **NOTICE**

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B **AVIS**

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radioélectriques fixés dans le Règlement des signaux parasites par le ministère canadien des Communications.

Thank you for purchasing the Roland LA Sound Module CM-32L. To make the best use of the CM-32L, please read this owner's manual carefully.

■ CONTENTS

Please read the separate "Guidebook for MIDI" before reading this owner's manual.

■ *Features of the CM-32L*

The following describes the features of the CM-32L.

●Sound Module that is ideal for computer music

The CM-32L features a multi timbral sound module that consists of 9 different Part (including one Rhythm Part) and therefore can be used as 8 individual synthesizers plus a rhythm sound module. The compact and simply designed body may be effectively used for computer music.
The CM-32L's sound module is almost the same as the Multi Timbral Sound Module MT-32 and therefore can use the application software of the MT-32.

●The CM-32L adopts LA sound system that results in high quality sounds

LA synthesis involves a great many technological advances resulting not only in a superior sound quality but also an improved ease of programming which have been proved in the D-50 or D-20.

●The CM-32L can produce a maximum of 32 voices using 32 Partials

Because the CM-32L can produce as many as 32 voices at the same time, you can enjoy high level ensemble performance.

●Rhythm Part is provided specifically for rhythm performance

The Rhythm Part features various drum and percussive voices, allowing you to enjoy wide varieties of rhythm performances. It also includes SE's (sound effects) such as a laughing voice or explosion for you to create unique performance.

●The CM-32L features a great many sounds

The CM-32L stores 128 different instrument sounds, 30 rhythm sounds and 33 SE's (sound effects).

●The built-in Digital Reverb that create realistic reverb effect

The CM-32L's digital reverb adds spaciousness and richness to the sound.

Important Notes

〈Concerning the power supply〉

●When employing an AC adaptor, make certain you use only one that has been supplied by the manufacturer. Use of any other power adaptor could result in malfunction or damage.

●When you make any connections with other devices, always turn off the power to all equipment first. This will help in preventing malfunction, and damage to speakers.

●Do not force the unit to share the same power outlet as one used for distortion producing devices (such as motors, variable lighting devices). Be sure to use a separate power outlet.

●Before using the AC adaptor, always make certain the voltage of the available power supply conforms to its rating.

●Do not place heavy objects onto, step on, or otherwise risk causing damage to the power cord.

●Whenever you disconnect the AC adaptor from the outlet, always grasp it by plug, to prevent internal damage to the cord and hazard of possible short circuits.

●If the unit is not to be used for a long period of time, unplug the cord from the socket.

〈Concerning placement〉

●Avoid using or storing the unit in the following places, as damage could result.

○Places subject to extremes in temperature. (Such as under direct sunlight, near heating units, above equipment generating heat, etc.)

○Places near water and moisture. (Baths, washrooms, wet floors, etc.) Places otherwise subject to high humidity.

○Dusty environments.

○Places where high levels of vibration are produced.

●Placing the unit near power amplifiers or other equipment containing large transformers may induce hum.

●Should the unit be operated nearby television or radio receivers, TV pictures may show signs of interference, and static might be heard on radios. In such cases, move the unit out of proximity with such devices.

<Maintenance>

●For everyday cleaning, wipe the unit with a soft dry cloth, or one that is dampened slightly. To remove dirt that is more stubborn, wipe using a mild, neutral detergent. Afterwards, make sure to wipe thoroughly with a soft cloth.

●Never apply benzene, thinners, alcohol or any like agents, to avoid the risk of discoloration and deformation.

<Other Precautions>

●Protect the unit from strong impact.

●Avoid getting any foreign objects (coins, wire, etc.), or liquids (water,drinks, etc.) into the unit.

●A certain small amount of heat will be radiated from the unit, and thus should not be considered abnormal.

●Before using the unit in a foreign country, check first with your local Roland Service Station.

●At any time that you notice a malfunction, or otherwise suspect there is damage, immediately refrain from using the unit. Then contact the store where bought, or the nearest Roland Service Station.

●Since the unit is equipped with a circuit, protection device, it requires a brief interval after power is turned on before it can be operated.

1. Panel Description

(1)Front Panel

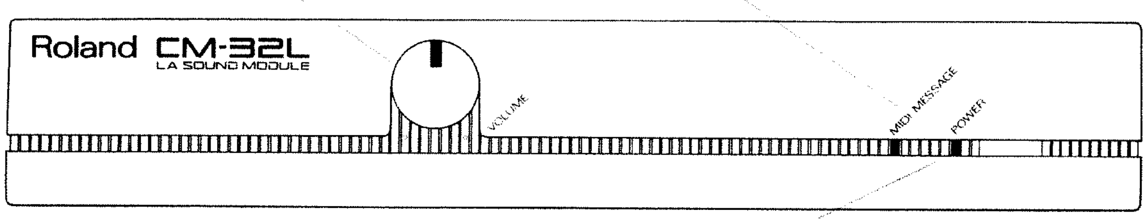
VOLUME (Volume Control Knob)

This adjusts the overall volume of the CM-32L that is output from the Output Jacks or Headphone Jack. Rotating the knob clockwise will increase the volume, and rotating it counter clockwise will decrease it.

* The volume balance of the individual Part can be controlled with the MIDI Volume (Control Change) messages.

MIDI MESSAGE (MIDI Message Indicator)

This lights up when the MIDI messages received.



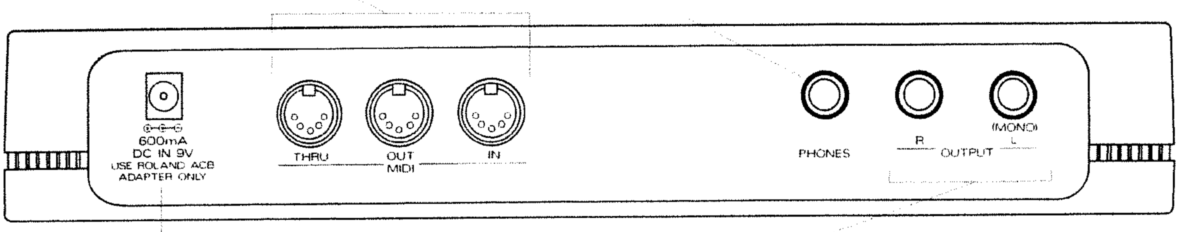
POWER (Power Indicator)

This lights up when the unit is switched on.

(2)Rear Panel

MIDI IN/OUT/THRU (MIDI Connectors)
To these sockets, connect MIDI devices.

PHONES (Headphone Jack)
Connect headphones to this jack. Use headphones of 8 to 150 ohm impedance, if possible. Even while the Headphone Jack is connected, the Output Jack send signals just the same.

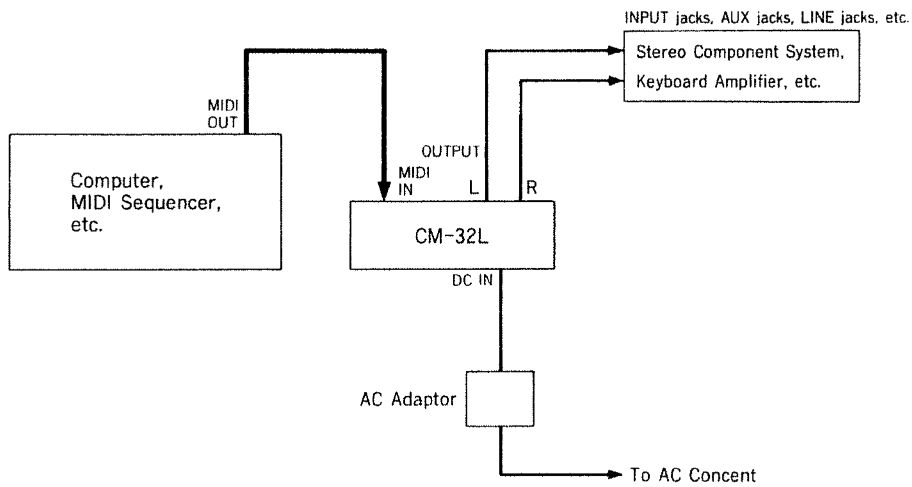


OUTPUT (Output Jacks)
Sounds of the CM-32L are output through these Output Jacks. The L and R jacks are provided, so use both of them for stereo output. For mono output, use the L (MONO) jacks.

DC IN (AC Adaptor Jack)
Connect the supplied AC adaptor to this jack.

2. Connections

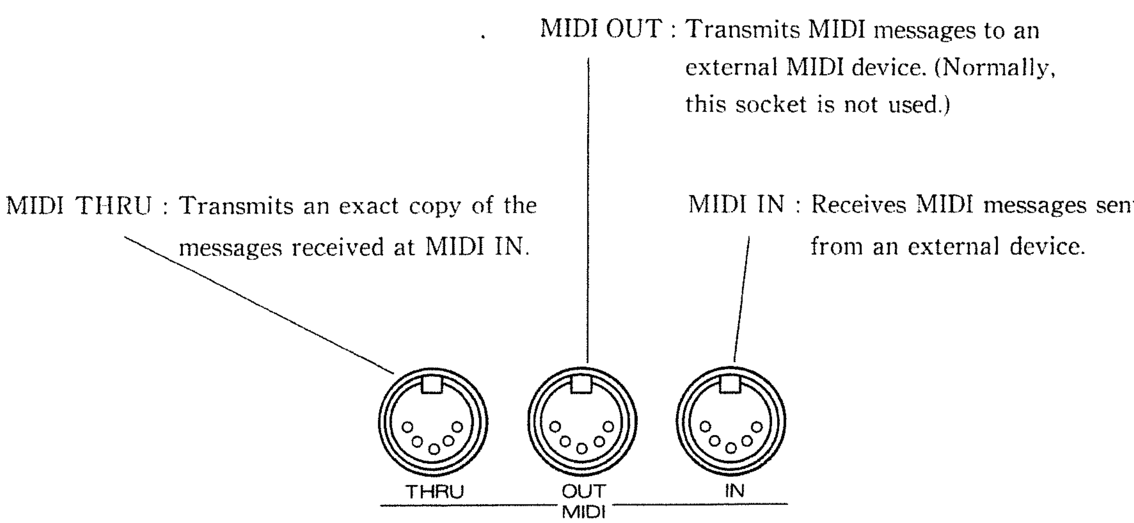
To play the CM-32L, connect the devices as shown below.



●MIDI Cable Connections

Connect the MIDI IN connector on the CM-32L to the MIDI OUT socket on a MIDI sequencer using a MIDI cable.

To use another MIDI sound module together with the CM-32L, connect it to the MIDI THRU connector. However, do not connect more than three or four MIDI devices through MIDI THRU's. If more number of devices, MIDI signals may not be received correctly causing malfunction of the entire system. If you wish to setup many number of devices, use the MIDI Thru Box.

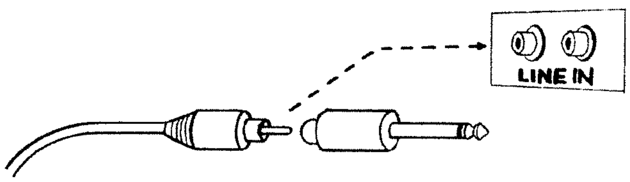


●**Audio Cable Connections**

Connect the Output Jacks of the CM-32L to the input jacks of a keyboard amplifier or stereo component system using an audio cable. The CM-32L features stereo outputs, but use the L (MONO) jack only for mono output.

◆When connecting the CM-32L to a keyboard amplifier or an electronic piano that features external input jack :
If it features an input level selector switch, set it to "H".

◆When connecting the CM-32L to a stereo component system :
Connect the CM-32L to the LINE IN or AUX IN (input jack). When the input jack are pin jack type, remove the adaptor from the audio cable of accessory.

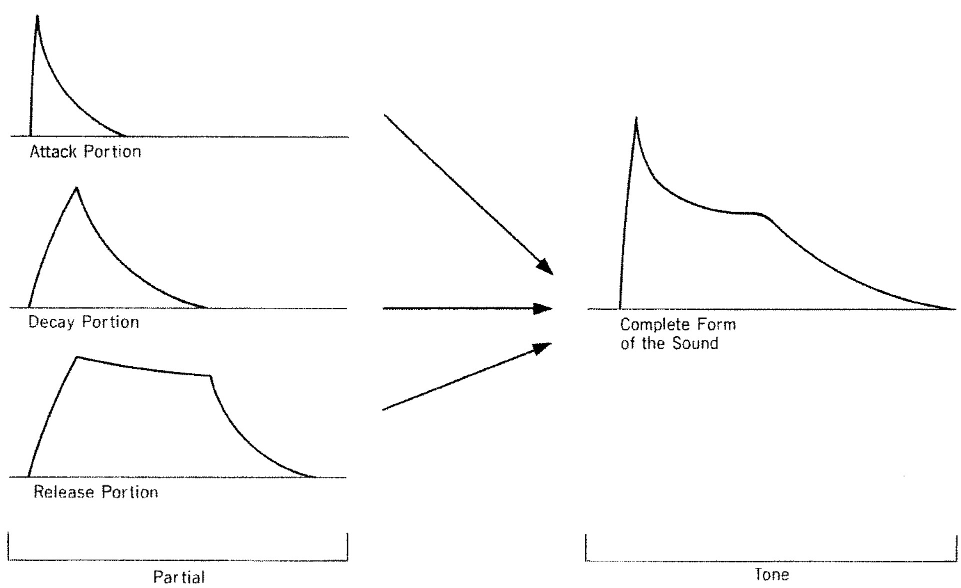


3. Structure of the CM-32L

The following briefly explains the structure of the CM-32L.

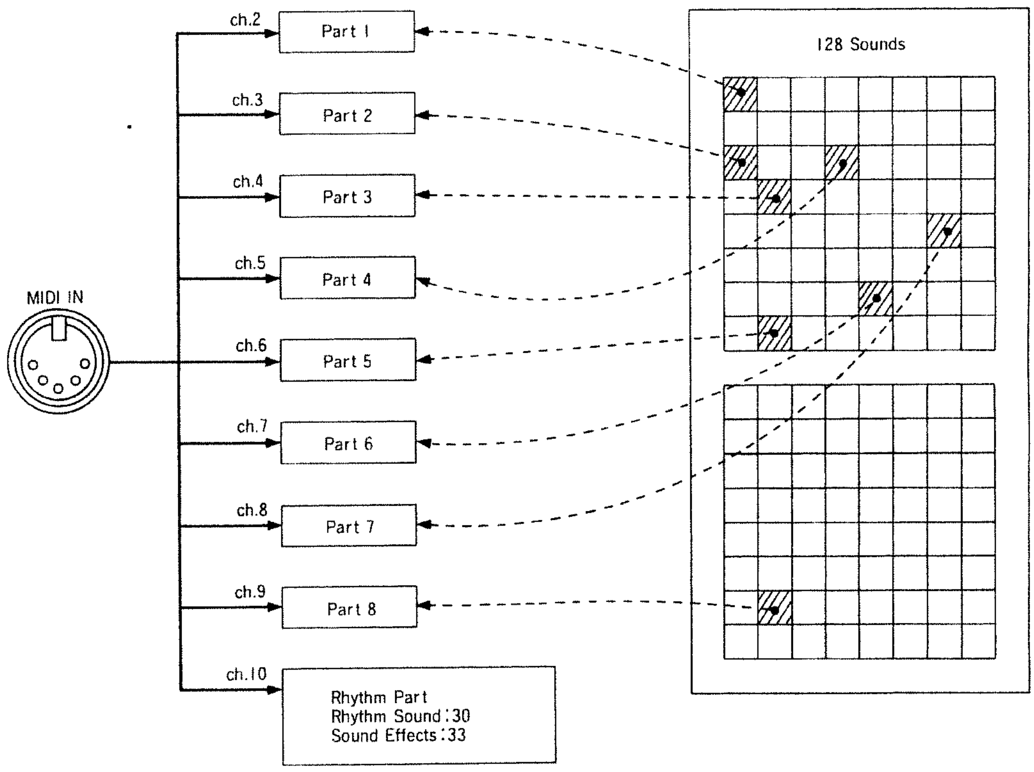
(1)LA Sound Synthesis

LA stands for Linear Arithmetic synthesis which is the heart of the new technology. LA synthesis involves a great many technological advances resulting not only in a superior sound quality but also an improved ease of programming. The LA system uses Partials to create wide varieties of sounds. A Partial may be called the smallest element of a sound. For instance, a sound may be made from three elements (Partials) ; attack, decay and release.



(2)Structure of the Sound Module

The CM-32L is a multi timbral sound module that consists of 9 different Parts adopting the LA synthesis. These Parts work like 8 different synthesizers and a rhythm machine.
Each Part is controlled by information received on an individual MIDI channel. So, you must set the receive channel of each Part to the same number as the transmit channel of the external MIDI device. Using a computer or MIDI sequencer that can send more than one MIDI channel messages, you can enjoy ensemble performance with different Parts.



●Part

The CM-32L stores 128 different sounds, and any of these sounds can be assigned to each of 1 - 8 Parts. Sounds in a Part can be changed by MIDI Program Change messages.
In the Rhythm Part, 63 different drum and SE (sound effects) are assigned to the note numbers.

●Partial

The CM-32L can produce a maximum of 32 voices at the same time using 32 Partials. A Tone consists of one to four Partials, and the maximum number of voices that can be played at the same time will vary depending on the number of Partials used in the Tone. For details, see page 18 "7. Maximum Voices".

4. Sound Selection

The CM-32L can use the following sounds:

(1)Sounds of Parts 1 - 8

Parts 1 to 8 can use the following sounds:

PROG#	TONE	Ptl #
1/00H	AcouPiano 1	4
2/01H	AcouPiano 2	2
3/02H	AcouPiano 3	1
4/03H	ElecPiano 1	3
5/04H	ElecPiano 2	2
6/05H	ElecPiano 3	2
7/06H	ElecPiano 4	1
8/07H	Honkytonk	3
9/08H	Elec Org 1	3
10/09H	Elec Org 2	3
11/0AH	Elec Org 3	2
12/0BH	Elec Org 4	2
13/0CH	Pipe Org 1	3
14/0DH	Pipe Org 2	3
15/0EH	Pipe Org 3	2
16/0FH	Accordion	2
17/10H	Harpsi 1	4
18/11H	Harpsi 2	3
19/12H	Harpsi 3	1
20/13H	Clavi 1	3
21/14H	Clavi 2	2
22/15H	Clavi 3	1
23/16H	Celesta 1	4
24/17H	Celesta 2	2
25/18H	SynBrass 1	2
26/19H	SynBrass 2	3
27/1AH	SynBrass 3	2
28/1BH	SynBrass 4	2
29/1CH	Syn Bass 1	2
30/1DH	Syn Bass 2	2
31/1EH	Syn Bass 3	2
32/1FH	Syn Bass 4	1

PROG #	TONE	Ptl #
33/20H	Fantasy	3
34/21H	Harmo Pan	3
35/22H	Chorale	3
36/23H	Glasses	2
37/24H	Soundtrack	4
38/25H	Atmosphere	4
39/26H	Warm Bell	4
40/27H	Funny Vox	1
41/28H	Echo Bell	3
42/29H	Ice Rain	3
43/2AH	Oboe 2001	2
44/2BH	Echo Pan	2
45/2CH	DoctorSolo	2
46/2DH	Schooldaze	2
47/2EH	Bellsinger	1
48/2FH	SquareWave	2
49/30H	Str Sect 1	4
50/31H	Str Sect 2	3
51/32H	Str Sect 3	2
52/33H	Pizzicato	3
53/34H	Violin 1	3
54/35H	Violin 2	2
55/36H	Cello 1	3
56/37H	Cello 2	2
57/38H	Contrabass	2
58/39H	Harp 1	3
59/3AH	Harp 2	2
60/3BH	Guitar 1	2
61/3CH	Guitar 2	2
62/3DH	Elec Gtr 1	4
63/3EH	Elec Gtr 2	3
64/3FH	Sitar	4

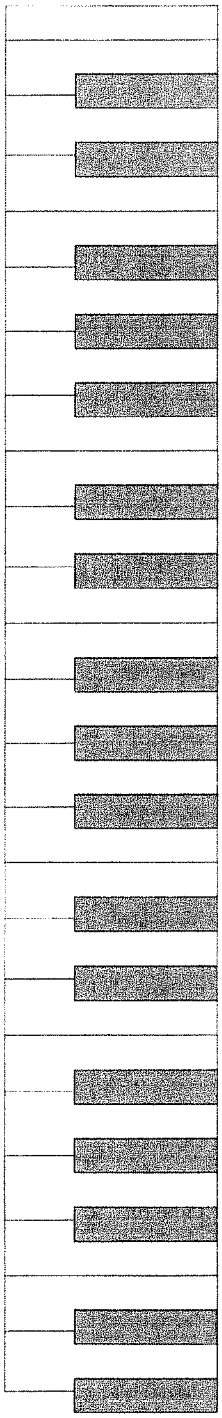
PROG #	TONE	Ptl #
65/40H	AcouBass 1	2
66/41H	AcouBass 2	1
67/42H	ElecBass 1	2
68/43H	ElecBass 2	1
69/44H	SlapBass 1	3
70/45H	SlapBass 2	2
71/46H	Fretless 1	4
72/47H	Fretless 2	2
73/48H	Flute 1	4
74/49H	Flute 2	2
75/4AH	Piccolo 1	3
76/4BH	Piccolo 2	2
77/4CH	Recorder	2
78/4DH	Pan Pipes	3
79/4EH	Sax 1	4
80/4FH	Sax 2	3
81/50H	Sax 3	2
82/51H	Sax 4	1
83/52H	Clarinet 1	3
84/53H	Clarinet 2	2
85/54H	Oboe	2
86/55H	Engl Horn	2
87/56H	Bassoon	2
88/57H	Harmonica	2
89/58H	Trumpet 1	3
90/59H	Trumpet 2	2
91/5AH	Trombone 1	3
92/5BH	Trombone 2	2
93/5CH	Fr Horn 1	3
94/5DH	Fr Horn 2	2
95/5EH	Tuba	2
96/5FH	Brs Sect 1	4

PROG #	TONE	Ptl #
97/60H	Brs Sect 2	3
98/61H	Vibe 1	3
99/62H	Vibe 2	2
100/63H	Syn Mallet	1
101/64H	Windbell	3
102/65H	Glock	2
103/66H	Tube Bell	4
104/67H	Xylophone	1
105/68H	Marimba	3
106/69H	Koto	2
107/6AH	Sho	4
108/6BH	Shakuhachi	4
109/6CH	Whistle 1	2
110/6DH	Whistle 2	1
111/6EH	Bottleblow	4
112/6FH	Breathpipe	3
113/70H	Timpani	2
114/71H	MelodicTom	1
115/72H	Deep Snare	2
116/73H	ElecPerc 1	2
117/74H	ElecPerc 2	2
118/75H	Taiko	3
119/76H	Taiko Rim	1
120/77H	Cymbal	2
121/78H	Castanets	2
122/79H	Triangle	2
123/7AH	Orche Hit	4
124/7BH	Telephone	1
125/7CH	Bird Tweet	1
126/7DH	OneNoteJam	4
127/7EH	WaterBells	3
128/7FH	JungleTune	4

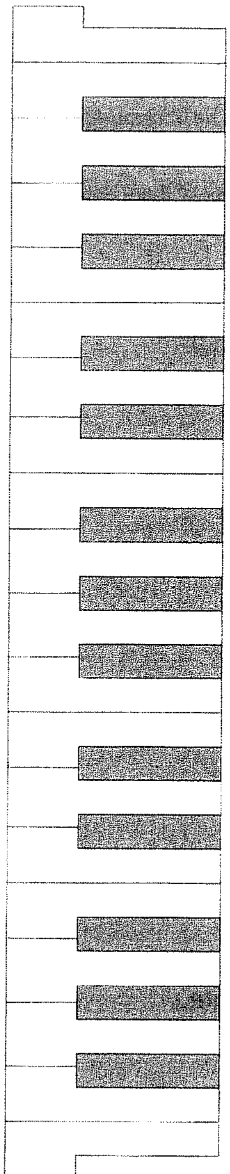
PROG # : MIDI Program Change Number (decimal indication / hexadecimal indication).
Ptl # : The number of partials used for a sound.

(2)Sounds of the Rhythm Part

The following rhythm sounds and SE are assigned to note numbers of the Rhythm Part:



Note Name(#)	Tone name	Ptl#	Pan	Left Center Right
B 1(35/23H)	Acoustic Bass Drum *	1	><	
C 2(36/24H)	Acoustic Bass Drum *	1	><	
C#2(37/25H)	Rim Shot *	1	<1	
D 2(38/26H)	Acoustic Snare Drum *	1	><	
D#2(39/27H)	Hand Clap *	1	1>	
E 2(40/28H)	Electronic Snare Drum *	1	<1	
F 2(41/29H)	Acoustic Low Tom *	1	4>	
F#2(42/2AH)	Closed High Hat *	1	<1	
G 2(43/2BH)	Acoustic Low Tom *	1	4>	
G#2(44/2CH)	Open High Hat 2 *	2	<1	
A 2(45/2DH)	Acoustic Middle Tom *	1	1>	
A#2(46/2EH)	Open High Hat 1 *	2	<1	
B 2(47/2FH)	Acoustic Middle Tom *	1	1>	
C 3(48/30H)	Acoustic High Tom *	1	<4	
C#3(49/31H)	Crash Cymbal *	2	<1	
D 3(50/32H)	Acoustic High Tom *	1	<4	
D#3(51/33H)	Ride Cymbal *	1	1>	
E 3(52/34H)				
F 3(53/35H)				
F#3(54/36H)	Tambourine *	1	2>	
G 3(55/37H)				
G#3(56/38H)	Cowbell *	1	><	
A 3(57/39H)				
A#3(58/3AH)				
B 3(59/3BH)				
C 4(60/3CH)	High Bongo *	1	<5	
C#4(61/3DH)	Low Bongo *	1	<3	
D 4(62/3EH)	Mute High Conga *	1	1>	
D#4(63/3FH)	High Conga *	1	2>	
E 4(64/40H)	Low Conga *	1	3>	
F 4(65/41H)	High Timbale *	1	><	
F#4(66/42H)	Low Timbale *	1	<2	
G 4(67/43H)	High Agogo *	1	<5	
G#4(68/44H)	Low Agogo *	1	<5	
A 4(69/45H)	Cabasa *	1	2>	
A#4(70/46H)	Maracas *	1	<3	
B 4(71/47H)	Short Whistle *	2	2>	
C 5(72/48H)	Long Whistle *	2	2>	
C#5(73/49H)	Quijada *	3	3>	
D 5(74/4AH)				
D#5(75/4BH)	Claves *	1	5>	



Note Name(#)	Tone name	Ptl#	Pan	Left	Center	Right
E 5(76/4CH)	Laughing	1	><		●	
F 5(77/4DH)	Screaming	1	><		●	
F#5(78/4EH)	Punch	1	><		●	
G 5(79/4FH)	Heartbeat	1	><		●	
G#5(80/50H)	Footsteps1	1	><		●	
A 5(81/51H)	Footsteps2	1	><		●	
A#5(82/52H)	Applause	3	><		●	
B 5(83/53H)	Creaking	1	><		●	
C 6(84/54H)	Door	1	><		●	
C#6(85/55H)	Scratch	4	><		●	
D 6(86/56H)	Windchime	2	><		●	
D#6(87/57H)	Engine	2	><		●	
E 6(88/58H)	Car-stop	1	><		●	
F 6(89/59H)	Car-pass	4	><		●	
F#6(90/5AH)	Crash	4	><		●	
G 6(91/5BH)	Siren	2	><		●	
G#6(92/5CH)	Train	2	><		●	
A 6(93/5DH)	Jet	4	><		●	
A#6(94/5EH)	Helicopter	4	><		●	
B 6(95/5FH)	Starship	4	><		●	
C 7(96/60H)	Pistol	2	><		●	
C#7(97/61H)	Machinegun	2	><		●	
D 7(98/62H)	Lasergun	2	><		●	
D#7(99/63H)	Explosion	4	><		●	
E 7(100/64H)	Dog	1	><		●	
F 7(101/65H)	Horse	2	><		●	
F#7(102/66H)	Birds	4	><		●	
G 7(103/67H)	Rain	4	><		●	
G#7(104/68H)	Thunder	3	><		●	
A 7(105/69H)	Wind	3	><		●	
A#7(106/6AH)	Waves	4	><		●	
B 7(107/6BH)	Stream	4	><		●	
C 8(108/6CH)	Bubble	3	><		●	

Ptl # : The number of Partials used for a sound. Pan : Pan value

* Pan determines the sound positioning of stereo output. SE (after Laughing) sounds are all set to the center panning, but some sounds are played in different pannings.

* The number of Partials means the partials needed to play a note of the Tone.

* The sounds marked with ignore the Note Off messages (No sustain).

5. Control via MIDI

The following explains the MIDI messages that the CM-32L uses and how to use the messages.

* The MIDI messages indicate decimal number and hexadecimal number. You may use either of them depending on the MIDI device you use.

64/40H

Decimal number　　Hexadecimal number (with H at the end)

(1)MIDI Channel of each Part

The MIDI channels of each Part of the CM-32L is set as shown below. You must set the transmit channel of the external MIDI device to the receive channel of the relevant Part.

Part	MIDI Receive ch
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
Rhythm Part	10

(2)MIDI Messages that the individual Part can receive

Each Part can receive the following MIDI messages:

●Note Messages

Note messages are for playing the keyboard. In the Rhythm Part, various different drum voices and SE can be played.

●Pitch Bender Messages

Pitch Bender messages control the Pitch Bend lever or Pitch Bend wheel, changing the pitch continuously.

●Program Change Messages

These are for changing sounds. The sounds in the Part that receives Program Change messages will change depending on the received Program Change number. (The Program Change messages are ignored in the Rhythm Part.)

* Roland used Program Change numbers 1 to 128, but some software units or sequencers use 0 to 127 numbers. So please be careful.

●Control Change Messages

These are for controlling various parameters and functions. Each Control number has its own function. The CM-32L can receive the following Control Change messages:

Modulation (Control Number : 1/01H)
This controls the depth of vibrato effect.

Data Entry (Control Number : 6/06H)
This is used for setting the RPN.

Volume (Control Number : 7/07H)
This controls the volume of each part, adjusting the volume balance between Parts. The actual volume is determined by the value of the expression (Control Number 11), volume (Control Number 7) and Master Volume (Exclusive messages) and the position of the Volume control knob.

Pan (Control Number : 10/0AH)
This sets the sound positioning of stereo output. (This information is ignored in the Rhythm Part.)

15 levels are normally valid for the pan value of the CM-32L, but only 8 levels are valid when you use a certain sound.

7 >	6 >	5 >	4 >	3 >	2 >	1 >	> <	< 1	< 2	< 3	< 4	< 5	< 6	< 7
7 >	5 >		3 >		1 >		< 1		< 3		< 5		< 7	
119-127	111-118	102-110	94-101	85-93	77-84	68-76	60-67	51-59	43-50	34-42	26-33	17-25	9-16	0-8
77H-7FH	6FH-76H	66H-6EH	5EH-65H	55H-5DH	4DH-54H	44H-4CH	3CH-43H	33H-3BH	2BH-32H	22H-2AH	1AH-21H	11H-19H	09H-10H	00H-08H

Expression (Control Number : 11/0BH)
This controls the volume of each part. The actual volume is determined by the value of the expression (Control Number 11), volume (Control Number 7) and Master Volume (Exclusive messages) and the position of the Volume Control knob.

Hold 1 (Control Number : 64/40H)
This sustains the sound currently played, just like a damper pedal of a piano.

RPN (Control Number : 100 & 101/64H& 65H)
RPN stands for Registered Parameter Number. In the CM-32L, the bender range of each Part can be controlled with the RPN number 0, Pitch Bend Sensitivity.

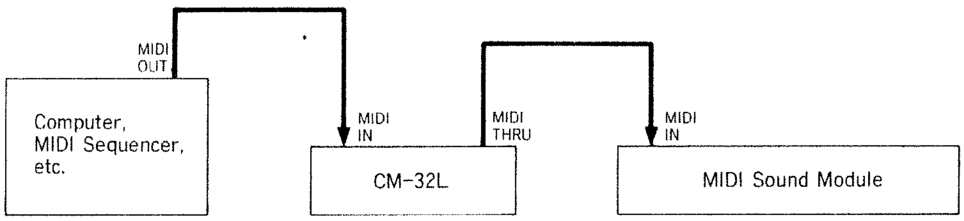
Reset All Controllers (Control Number : 121/79H)
This returns the Modulation, Expression, Hold 1 and Pitch Bender parameters to the default settings. The Part received this message will be set as shown below:

Modulation	0/00H	Off
Expression	127/7FH	Max.
Hold 1	0/00H	Off
Pitch Bender	±0/2000H	Center

(3)Advanced Control via MIDI

●Using another MIDI sound module

If you wish to extend the number of sounds using another MIDI sound module, make connections as follows. Set the MIDI receive channel of the connected sound module to a number other than the MIDI receive channel used for the CM-32L (channels 1, 11 - 16).



●Bender Range Control with RPN

The CM-32L allows you to control the bender range of each Part using the RPN (Registered Parameter Number).

To do that, send Control Change messages from an external MIDI device in the sequence shown below :

① RPN MSB (Control Number : 100／64H) 0／00H
② RPN LSB (Control Number : 101／65H) 0／00H
③ Data Entry(Control Number : 6／06H) vv

* vv is the value of the bender range to be set. It can be set in semi-tone steps within 2 octaves (0 - 24／00H - 18H).

<Example> To set the bender range of Part 4 (MIDI channel 5) to 12 (1 octave):

	MIDI ch	Control Number	Data	MIDI Message
①RPN MSB	5	100/64H	0/00H	B4H, 64H, 00H
②RPN LSB	5	101/65H	0/00H	B4H, 65H, 00H
③Data Entry	5	6/06H	12/0CH	B4H, 06H, 0CH

* Some types of MIDI sequencer transmits Control Change numbers of the same step (timing) in the sequence of smaller number to larger number. If you use this type of sequencer, be sure to set it so that the Control Change will be sent in the sequence of RPN MSB - RPN LSB - Data Entry by sifting the position of the RPN forward, etc.

●Control using the Exclusive Messages

Exclusive messages are messages exclusive to a particular manufacturer, such as sound data and setup data. Various parameters can be controlled using the Exclusive messages.

For details, see the MIDI Implementation at the back of this owner's manual.

6. Default Settings at Power-on

The CM-32L is default to the following values. (The programs you have made will be erased when the unit is switched off.)

	Sound	Pan	Volume	Expression
Part 1	SlapBass 1	><	100/64H	127/7FH
Part 2	Str Sect 1	><	100/64H	127/7FH
Part 3	Brs Sect 1	><	100/64H	127/7FH
Part 4	Sax 1	><	100/64H	127/7FH
Part 5	Ice Rain	<4	100/64H	127/7FH
Part 6	ElecPiano 1	7>	100/64H	127/7FH
Part 7	Bottleblow	<7	100/64H	127/7FH
Part 8	Orch Hit	7>	100/64H	127/7FH
Rhythm Part	------	----	100/64H	127/7FH

7. Maximum Voices

As previously explained in "3. Structure of the CM-32L", a sound is made of some Partials. Because the CM-32L produces sounds using Partials, the maximum voices that it can produce simultaneously will vary depending on the number of Partials used for the sound. The following explains the relation between the Partial and the maximum voices of the CM-32L.

(1)Partials and the maximum voices

The CM-32L can play any sound in any Part within 32 voices (Partials).
For example, if you play three sounds which are made of two Partials, six Partials will be used altogether(2 Partials × 3). In other words, when the CM-32L is used as a multi timbral sound module, it uses (the number of Partials assigned to Part 1) × (the number of voices currently playing in Part 1), that is, the total number of Partials used in each Part. In the Rhythm Part, the number of Partial used in each rhythm sound is different, therefore, count the total number of Partials used for the rhythm sound currentry playing.

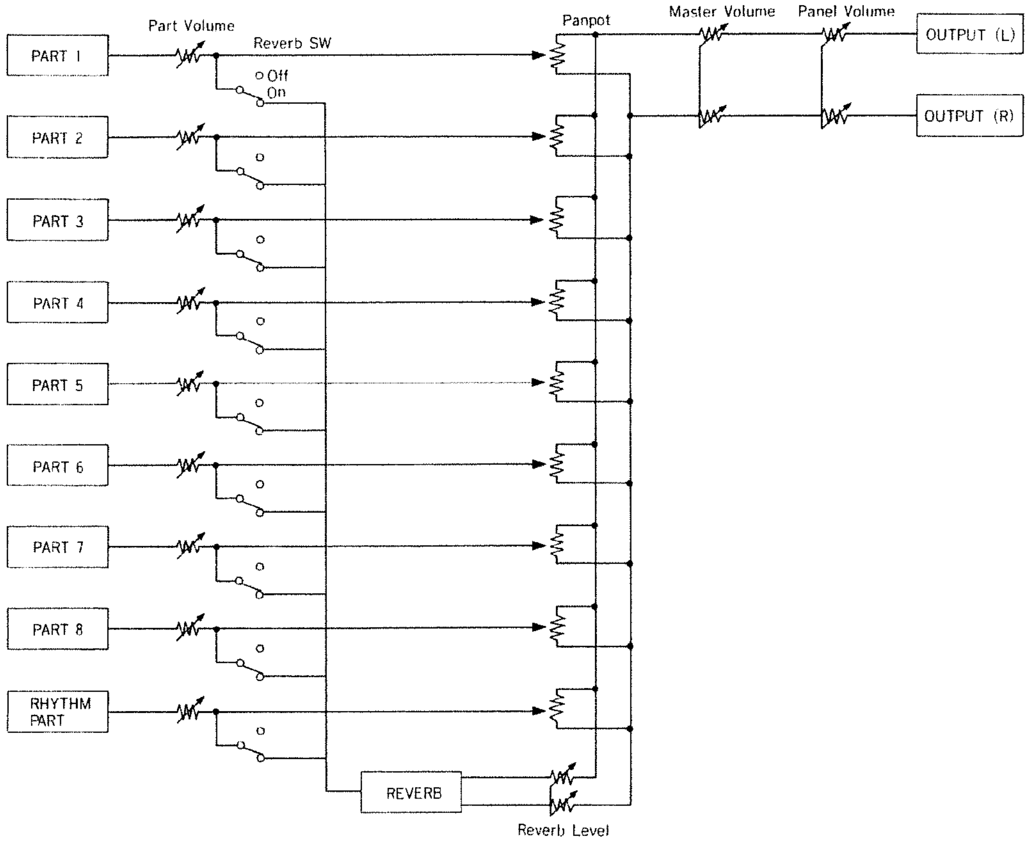
(2)Partial Reserve

The CM-32L can play any sound in any Part within 32 voices (Partials).
However, when you try to use more than 32 Partials, the Partial Reserve function sets the number of Partials which can be used for a certain Part prior to the other Parts. In other words, even when more key messages than reserved are sent, they will be put to work in the principal Part without being cut.

The Partial Reserve of the CM-32L is preprogrammed as shown below. The number of the Partials of each Part represents the number of Partials which can be reserved on top of the usual 32 Partials. You may consider the Partial Reserve then determine what phrases should be played in what Part.

Part 1	2
Part 2	10
Part 3	6
Part 4	4
Part 5	3
Part 6	0
Part 7	0
Part 8	0
Rhythm Part	6

CM-32L Block Diagram



Roland Exclusive Messages

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all exclusive messages (type IV) :

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

MIDI status : F0H, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufacturer - ID immediately after F0H (MIDI version1.0).

Manufacturer - ID : 41H

The Manufacturer - ID identifies the manufacturer of a MIDI instrument that triggers an exclusive message. Value 41H represents Roland's Manufacturer - ID.

Device - ID : DEV

The Device - ID contains a unique value that identifies the individual device in the multiple implementation of MIDI instruments. It is usually set to 00H - 0FH, a value smaller by one than that of a basic channel, but value 00H - 1FH may be used for a device with multiple basic channels.

Model - ID : MDL

The Model - ID contains a value that uniquely identifies one model from another. Different models, however, may share an identical Model - ID if they handle similar data.

The Model - ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model - IDs, each representing a unique model :

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

Command - ID : CMD

The Command - ID indicates the function of an exclusive message. The Command ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command IDs, each representing a unique function :

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

Main data : BODY

This field contains a message to be exchanged across an interface. The exact data size and contents will vary with the Model - ID and Command - ID.

2. Address - mapped Data Transfer

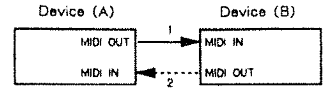
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory - resident records - - waveform and tone data, switch status, and parameters, for example - - to specific locations in a machine - dependent address space, thereby allowing access to data residing at the address a message specifies.

Address - mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures : one - way transfer and handshake transfer.

One - way transfer procedure (See Section 3 for details.)

This procedure is suited for the transfer of a small amount of data. It sends out an exclusive message completely independent of a receiving device status.

Connection Diagram

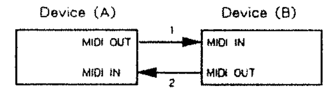


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

Handshake - transfer procedure (See Section 4 for details.)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connection at points 1 and 2 is essential.

Notes on the above two procedures

* There are separate Command - IDs for different transfer procedures.
* Devices A and B cannot exchange data unless they use the same transfer procedure, share identical Device - ID and Model ID, and are ready for communication.

3. One - way Transfer Procedure

This procedure sends out data all the way until it stops and is used when the messages are so short that answerbacks need not be checked.
For long messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts intervals of at least 20 milliseconds in between.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

Request data # 1 : RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will send out nothing.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
:	:
	LSB
ssH	Size MSB
:	:
	LSB
sum	Check sum
F7H	End of exclusive

* The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model - ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≡ Data set 1 : DT1 (12H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more data as well as a series of data formatted in an address - dependent order.

The MIDI standards inhibit non - real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft - through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate segments.

Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
:	:
	LSB
ddH	Data
:	:
sum	Check sum
F7H	End of exclusive

* A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The number of bytes comprising address data varies from one Model - ID to another.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≡ Example of Message Transactions

● Device A sending data to Device B
Transfer of a DT1 message is all that takes place.

Device (A) — Device (B)

[Data set 1] ——→

* More than 20m sec time internal.

[Data set 1] ——→

:

[Data set 1] ——→

● Device B requesting data from Device A
Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.

Device (A) — Device (B)

[Data set 1] ←—— [Request data]

[Data set 1] ——→

* More than 20m sec time internal.

[Data set 1] ——→

:

[Data set 1] ——→

4. Handshake - Transfer Procedure

Handshaking is an interactive process where two devices exchange error checking signals before a message transaction takes place, thereby increasing data reliability. Unlike one - way transfer that inserts a pause between message transactions, handshake transfer allows much speedier transactions because data transfer starts once the receiving device returns a ready signal.

When it comes to handling large amounts of data - sampler waveforms and synthesizer tones over the entire range, for example - - across a MIDI interface, handshaking transfer is more efficient than one - way transfer.

Types of Messages

Message	Command ID
Want to send data	WSD (40H)
Request data	RQD (41H)
Data set	DAT (42H)
Acknowledge	ACK (43H)
End of data	EOD (45H)
Communication error	ERR (4EH)
Rejection	RJC (4FH)

≡ Want to send data : WSD (40H)

This message is sent out when data must be sent to a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of the data to be sent.

On receiving a WSD message, the remote device checks its memory for the specified data address and size which will satisfy the request. If it finds them and is ready for communication, the device will return an "Acknowledge (ACK)" message.
Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
40H	Command ID
aaH	Address MSB
:	:
	LSB
ssH	Size MSB
:	:
	LSB
sum	Check sum
F7H	End of exclusive

* The size of the data to be sent does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the data should reside.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model - ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≡Request data : RQD (41H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQD message, the remote device checks its memory for the data address and size which satisfy the request. If it finds them and is ready for communication, the device will transmit a "Data set (DAT)" message, which contains the requested data. Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
41H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

* The size of the requested data does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the requested data resides.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model - ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≡Data set : DAT (42H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, the message can convey the starting address of one or more data as well as a series of data formatted in an address - dependent order.

Although the MIDI standards inhibit non - real time messages from interrupting an exclusive one, some devices support a "soft - through" mechanism for such interrupts. To maintain compatibility with such devices, Roland has limited the DAT to 256 bytes so that an excessively long message is sent out in separate segments.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
42H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ddH	Data
⋮	⋮
sum	Check sum
F7H	End of exclusive

* A DAT message is capable of providing only the valid data among those specified by an RQD or WSD message.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The number of bytes comprising address data varies from one model ID to another.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≡Acknowledge : ACK (43H)

This message is sent out when no error was detected on reception of a WSD, DAT, "End of data (EOD)", or some other message and a requested setup or action is complete. Unless it receives an ACK message, the device at the other end will not proceed to the next operation.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
43H	Command ID
F7H	End of exclusive

≡End of data : EOD (45H)

This message is sent out to inform a remote device of the end of a message. Communication, however, will not come to an end unless the remote device returns an ACK message even though an EOD message was transmitted.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
45H	Command ID
F7H	End of exclusive

≡Communications error : ERR (4EH)

This message warns the remote device of a communications fault encountered during message transmission due, for example, to a checksum error. An ERR message may be replaced with a "Rejection (RJC)" one, which terminates the current message transaction in midstream.

When it receives an ERR message, the sending device may either attempt to send out the last message a second time or terminate communication by sending out an RJC message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4EH	Command ID
F7H	End of exclusive

≡ Rejection : RJC (4FH)

This message is sent out when there is a need to terminate communication by overriding the current message. An RJC message will be triggered when :

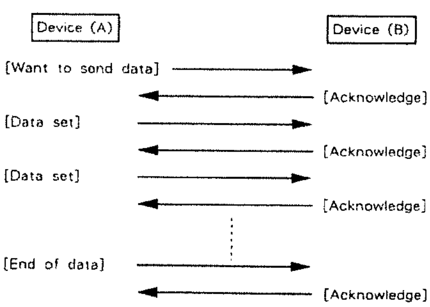
- a WSD or RQD message has specified an illegal data address or size.
- the device is not ready for communication.
- an illegal number of addresses or data has been detected.
- data transfer has been terminated by an operator.
- a communications error has occurred.

An ERR message may be sent out by a device on either side of the interface. Communication must be terminated immediately when either side triggers an ERR message.

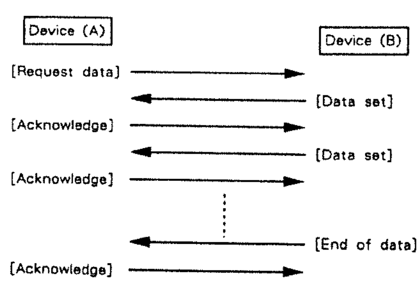
Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4FH	Command ID
F7H	End of exclusive

≡ Example of Message Transactions

●Data transfer from device (A) to device (B).

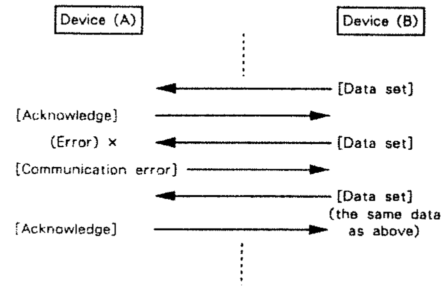


●Device (A) requests and receives data from device (B).

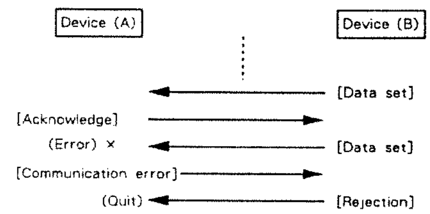


●Error occurs while device (A) is receiving data from device (B).

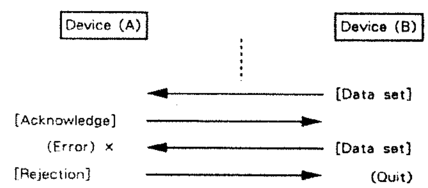
1) Data transfer from device (A) to device (B).



2) Device (B) rejects the data re – transmitied, and quits data transfer.



3) Device (A) immediately quits data transfer.



LA SOUND MODULE
Model CM－32L

MIDI Implementation

Date : Apr. 18. 1989
Version : 1.00

1. TRANSMITTED DATA

■Exclusive

Status
F0H : System exclusive
F7H : EOX (End Of Exclusive)

For details, see Sections 3 and 4, and Roland Exclusive Messages.

2. RECOGNIZED RECEIVE DATA

■Note event

●Note off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

kk = note number 00H － 7FH (0 － 127)
vv = velocity ignored
n = MIDI Channel 0H － FH (1 － 16)

A tone whose envelope mode is "NO SUS" ignores Note off message.

●Note on

Status	Second	Third
9nH	kkH	vvH

kk = note number 00H － 7FH (0 － 127)
vv = velocity 01H － 7FH (1 － 127)
n = MIDI Channel 0H － FH (1 － 16)

Part 1 － 8 :Note numbers outside of the range 12 － 108 are transposed to the nearest octave inside the range.
Rhythm Part : Note numbers outside of the range 24 － 108 are ignored.

■Control change

●Modulation Depth

Status	Second	Third
BnH	01H	vvH

vv = Modulation depth 00H － 7FH (0 － 127)
n = MIDI Channel 0H － FH (1 － 16)

●Data Entry

Status	Second	Third
BnH	06H	vvH

vv = Value of a parameter specified by RPN. (See description in RPN MSB.)
n = MIDI Channel 0H － FH (1 － 16)

●Main Volume

Status	Second	Third
BnH	07H	vvH

vv = Volume Value 00H － 7FH (0 － 127)
n = MIDI Channel 0H － FH (1 － 16)

Controls the volume of a Part accessible through the received MIDI channel. The maximum volume is determined by Master volume and Expression message.

●Panpot

Status	Second	Third
BnH	0AH	vvH

vv = Panpot Value 00H － 7FH (0 － 127)
n = MIDI Channel 0H － FH (1 － 16)

Orientation of sound is as follows.

127 = LEFT, 64 = CENTER, 0 = RIGHT

This information is ignored in the Rhythm Part.

●Expression

Status	Second	Third
BnH	0BH	vvH

vv = Expression 00H － 7FH (0 － 127)
n = MIDI Channel 0H － FH (1 － 16)

Controls the volume of a Part accessible through the received MIDI channel. The maximum volume is determined by Master volume and Main Volume message.

●Hold － 1

Status	Second	Third
BnH	40H	vvH

vv = 00H － 3FH : off
vv = 40H － 7FH : on
n = MIDI Channel 0H － FH (1 － 16)

●RPN LSB

Status	Second	Third
BnH	64H	vvH

vv = The lower byte of a parameter number controlled by RPN. (Refer to RPN MSB.)
n = MIDI Channel 0H － FH (1 － 16)

●RPN MSB

Status	Second	Third
BnH	65H	vvH

vv = The upper byte of a parameter number controlled by RPN.
n = MIDI Channel 0H － FH (1 － 16)

Using MIDI RPN, CM－32L parameters can be controlled by Control change message. RPN MSB and LSB specify the parameter to be controlled while Data entry sets the parameter value.
Effective RPN to CM－32L is Bender range.

RPN MSB	RPN LSB	Data Entry	Description
00H	00H	vvH	Bender Range vv = 0 - 24 Unit in semitone, 2 octaves maximum

●Reset All Controllers

Status	Second	Third
BnH	79H	00H

n = MIDI Channel 0H － FH (1 － 16)

Sets eatch of the following controls as follows.

Controller	setting	
Modulation Depth	MIN	(0)
Expression	MAX	(127)
Hold 1	OFF	(0)
Pitch Bender Change	CENTER	

Program change

Status	Second
CnH	ppH

pp = Patch Number 0H − 7FH (1 − 128)
n = MIDI Channel 0H − FH (1 − 16)

Program change information is used to change Patches.
This information is ignored in the Rhythm Part.

Pitch Bender change

Status	Second	Third
EnH	llH	mmH

ll = Pitch Bender change value (Lower byte)
00H − 7FH (0 − 127)
mm = Pitch Bender change value (Upper byte)
00H − 7FH (0 − 127)
n = MIDI Channel 0H − FH (1 − 16)

Mode message

● All notes off

Status	Second	Third
BnH	7BH	00H

n = MIDI Channel 0H − FH (1 − 16)

Turns off all notes that have been turned on by MIDI Note on.

● OMNI OFF

Status	Second	Third
BnH	7CH	00H

n = MIDI Channel 0H − FH (1 − 16)

Recognized as only All notes off.
CM − 32L remains in mode 3 (omni off, poly).

● OMNI ON

Status	Second	Third
BnH	7DH	00H

n = MIDI Channel 0H − FH (1 − 16)

Recognized as only All notes off.
CM − 32L remains in mode 3 (omni off, poly).

● MONO

Status	Second	Third
BnH	7EH	mmH

mm = MONO Channel range ignored
n = MIDI Channel 0H − FH (1 − 16)

Recognized as only All notes off.
CM − 32L remains in mode 3 (omni off, poly).

● POLY

Status	Second	Third
BnH	7FH	00H

n = MIDI Channel 0H − FH (1 − 16)

Recognized as only All notes off.
CM − 32L remains in mode 3 (omni off, poly).

Exclusive

Status
F0H : System Exclusive
F7H : EOX (End Of Exclusive)

Using exclusive message, a set of parameters for a timbre or individual parameters in a patch or timbre can be transferred to CM − 32L.
Refer to Roland Exclusive Messages and Sections 3 and 4.

Active sensing

Status
FEH : Active Sensing

Once recieving this message, the CM − 32L expects to accept status or data in sequence, at last within 300 msec intervals.
If the unit fails to recieve a message within 300 msec after previous one, it judges there is a problem somewhere in MIDI path, muting the current sound and setting each of controllers as below, then stopping 300 msec − interval monitoring of incoming signal.

Controller	setting	
Modulation Depth	MIN	(0)
Expression	MAX	(127)
Hold 1	OFF	(0)
Pitch Bender Change	CENTER	

3. EXCLUSIVE COMMUNICATION

Parameters for patches or timbres can be transferred to/from CM − 32L through Exclusive message. Model − ID # of CM − 32L is 16H.
In a system where more than one MIDI channel is assigned to CM − 32L, Unit # may be set to the CM − 32L instead of Device − ID # of a basic channel. The advantage of Unit # is that a specific part is made accessible independent of MIDI channel of that part.
Whether to use MIDI channel or Unit # depends on parameter address.
CM − 32L recognizes MIDI channels 1 thru 16 and Unit # 17 as Device − ID #. Note that the actual Device − ID # is the number 1 less MIDI channel number or Unit #.

One way communication

Request Data 1 RQ1 11H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID (Roland)	
DEV	Device ID	
16H	Model ID	
11H	Command ID (RQ1)	
aaH	Address MSB	* 3-1
aaH	Address	
aaH	Address LSB	
ssH	Size MSB	
ssH	Size	
ssH	Size LSB	
sum	Check sum	
F7H	EOX (End Of Exclusive)	

Data set 1 DT1 12H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID (Roland)	
DEV	Device ID	
16H	Model ID	
12H	Command ID DT1)	
aaH	Address MSB	* 3-1
aaH	Address	
aaH	Address LSB	
ddH	Data	* 3-2
:	:	
sum	Check sum	
F7H	EOX (End Of Exclusive)	

● Communication Sequence

CM－32L never requests data of the other party.
The following sequence applies to the other party that wants to get some parameters from CM－32L.

```
   Receiver                              Transmitter(CM-32L)
 ------------                          ------------------


                   [RQ1]--------->

 When a programmer or sequencer        When the received Data request
 needs CM-32L resident parameter.       contains 1) address that
                                       matches a parameter base
                                       address and 2) address size is
                                       1 or more, CM-32L sends the
                                       data in that area.

                   <--------[DT1]

 If the address matches the
 parameter base address, stores
 the data into that location.

 (                 <--------[DT1]                                 )
 (                                     Will repeat sending Data set )
 (                                     until all requested data are )
 (                                     receivd by the receiver.     )
```

■ Handshaking communication

Want to send data　　WSD 40H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID (Roland)	
DEV	Device ID	
16H	Model ID	
40H	Command ID (WSD)	
aaH	Address MSB	*3-1
aaH	Address	
aaH	Address LSB	
ssH	Size　MSB	
ssH	Size	
ssH	Size　LSB	
sum	Check sum	
F7H	EOX (End Of Exclusive)	

Request data　　RQD 41H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID (Roland)	
DEV	Device ID	
16H	Model ID	
41H	Command ID (RQD)	
aaH	Address MSB	*3-1
aaH	Address	
aaH	Address LSB	
ssH	Size MSB	
ssH	Size	
ssH	Size LSB	
sum	Check sum	
F7H	EOX (End Of Exclusive)	

Data set　　DAT 42H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID (Roland)	
DEV	Device ID	
16H	Model ID	
42H	Command ID (DAT)	
aaH	Address MSB	*3-1
aaH	Address	
aaH	Address LSB	
ddH	Data	*3-2
:	:	
sum	Check sum	
F7H	EOX (End Of Exclusive)	

Acknowledge　　ACK 43H

Byte	Description
F0H	Exclusive status
41H	Manufacturer's ID (Roland)
DEV	Device ID
16H	Model ID
43H	Command ID (ACK)
F7H	EOX (End Of Exclusive)

End of data　　EOD 45H

Byte	Description
F0H	Exclusive status
41H	Manufacturer's ID (Roland)
DEV	Device ID
16H	Model ID
45H	Command ID (EOD)
F7H	EOX (End Of Exclusive)

Communication error　　ERR 4EH

Byte	Description
F0H	Exclusive status
41H	Manufacturer's ID (Roland)
DEV	Device ID
16H	Model ID
4EH	Command ID (ERR)
F7H	EOX (End Of Exclusive)

Rejection　　RJC 4FH

Byte	Description
F0H	Exclusive status
41H	Manufacturer's ID (Roland)
DEV	Device ID
16H	Model ID
4FH	Command ID (RJC)
F7H	EOX (End Of Exclusive)

● Communication Sequence

CM - 32L will never require any data of the other party. The following sequence can apply to the outside world where a unit wants to get CM - 32L resident parameters.

```
Receiver                                Transmitter(CM-32L)
-----------                             ------------------


                        [RQD]---------->

Outside unit such as a computer
can obtain CM-32L parameters by
following the steps below, starting
with transmission of Data request.

(                       <----------[RJC]                                  )
(Ends current communication upon        Will send this message when      )
(receipt of this message.               Data request comes while it      )
(                                       is reproducing sound.            )

                        <----------[DAT]
                                        When the Data request comes
                                        during no-sound period and
                                        contains address listed in the
                                        Parameter bade sddress table
                                        followed by 1 or more address
                                        size, CM-32L will send the data
                                        stored in that address area
                                        and subsequent.

If the address matches the
parameter bade address, stores
the data into that location; then
sends Acknowledge.
                        [ACK]---------->

                                        Sends the next data in reply
                                        to Acknowledge.

                        <----------[DAT]
                        [ACK]---------->
                              :
(                       [ERR]---------->                                  )
(should failure in data reception       When receiving this message,     )
(occur(e.g. disagreement of checksum),  sends the previous data          )
(sends this message.                    again.                           )
(                       <----------[DAT]                                  )

                              :
                              :
                        <----------[EOD]

sends Acknowledge in response to        Sends this data when completing
Data end and terminates handshaking     required data transfer.
communication.

                        [ACK]---------->

                                        When this message comes as an
                                        answer to the Data end,
                                        terminates communication.
```

＊3 - 1 Address and Address size must cover the memory location where data exist.

＊3 - 2 When comming data are for partial reserve of the system parameter, CM - 32L will make these reserves effective only after receiving all the data.

4. PARAMETER ADDRESS MAP

Addresses are represented in 7 - bit hexadecimal.

Address	MSB		LSB
Binary	0aaa aaaa	0bbb bbbb	0ccc cccc
7-bit Hexadecimal	AA	BB	CC

The actual address of a parameter is a sum of the start address of each block and one or more offset address.

＊4 - 1 Start address plus two offset addresses
(in tables ＊4 - 1 and ＊4 - 1 - 1 (＊4 - 1 - 2))

＊4 - 2 Start address plus one offset address
(in tables ＊4 - 2)

＊4 - 3 Start address plus two offset addresses
(in tables ＊4 - 3 and ＊4 - 3 - 1)

＊4 - 4 - ＊4 - 7 Start address plus one offset address
(in tables ＊4 - 4 - ＊4 - 7)

■ Parameter base address

Temporary area (Accessed through each basic channel)

Start address	Description	
02 00 00	Timbre Temporary Area (part 1 - 8)	*4-1

Whole part (Accessible on UNIT #)

Start address	Description	
03 00 00	Patch Temporary Area(part 1)	*4-2
03 00 10	Patch Temporary Area(part 2)	
:	:	
03 00 60	Patch Temporary Area(part 7)	
03 00 70	Patch Temporary Area(part 8)	
03 01 00	Patch Temporary Area(rhythm part)	
03 01 10	Rhythm Setup Temporary Area	*4-3
04 00 00	Timbre Temporary Area(part 1)	*4-1
04 01 76	Timbre Temporary Area(part 2)	
:	:	
04 0B 44	Timbre Temporary Area(part 7)	
04 0D 3A	Timbre Temporary Area(part 8)	
05 00 00	Patch Memory #1	*4-4
05 00 08	Patch Memory #2	
:	:	
05 07 70	Patch Memory #127	
05 07 78	Patch Memory #128	
08 00 00	Timbre Memory #1	*4-1
08 02 00	Timbre Memory #2	
:	:	
08 7C 00	Timbre Memory #63	
08 7E 00	Timbre Memory #64	
10 00 00	System area	*4-5
40 00 00	Write Request	*4-6
7F × × × ×	All parameters Reset	*4-7

Notes :

＊4 - 1 Timbre Temporary area / Timbre Memory

Offset address	Description	
00 00 00	Common parameter	*4-1-1
00 00 0E	Partial parameter (for Partial# 1)	*4-1-2
00 00 48	Partial parameter (for Partial# 2)	
00 01 02	Partial parameter (for Partial# 3)	
00 01 3C	Partial parameter (for Partial# 4)	

*4 - 1 - 1 Common Parameter

Offset address		Description	
00	0aaa aaaa	TIMBRE NAME 1	32 - 127 (ASCII)
:	:	:	
09	0aaa aaaa	TIMBRE NAME 10	
0A	0000 aaaa	Structure of Partial# 1 & 2	0 - 12 (1 - 13)
0B	0000 aaaa	Structure of Partial# 3 & 4	0 - 12 (1 - 13)
0C	0000 aaaa	PARTIAL MUTE	0 - 15 (0000 - 1111)
0D	0000 000a	ENV MODE	0 - 1 (Normal, No sustain)
Total size		00 00 0E	

*4 - 1 - 2 Partial Parameter

Offset address		Description	
00 00	0aaa aaaa	WG PITCH COARSE	0 - 96 (C1, C#1, - C9)
00 01	0aaa aaaa	WG PITCH FINE	0 - 100 (-50 - +50)
00 02	0000 aaaa	WG PITCH KEYFOLLOW	0 - 16 (-1, -1/2, -1/4, 0, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2, s1, s2)
00 03	0000 000a	WG PITCH BENDER SW	0 - 1 (OFF, ON)
00 04	0000 000a	WG WAVEFORM/PCM BANK	0 - 3 (SQU/1, SAW/1, SQU/2, SAW/2)
00 05	0aaa aaaa	WG PCM WAVE #	0 - 127 (1 - 128)
00 06	0aaa aaaa	WG PULSE WIDTH	0 - 100
00 07	0000 aaaa	WG PW VELO SENS	0 - 14 (-7 - +7)
00 08	0000 aaaa	P-ENV DEPTH	0 - 10
00 09	0aaa aaaa	P-ENV VELO SENS	0 - 100
00 0A	0000 0aaa	P-ENV TIME KEYF	0 - 4
00 0B	0aaa aaaa	P-ENV TIME 1	0 - 100
00 0C	0aaa aaaa	P-ENV TIME 2	0 - 100
00 0D	0aaa aaaa	P-ENV TIME 3	0 - 100
00 0E	0aaa aaaa	P-ENV TIME 4	0 - 100
00 0F	0aaa aaaa	P-ENV LEVEL 0	0 - 100 (-50 - +50)
00 10	0aaa aaaa	P-ENV LEVEL 1	0 - 100 (-50 - +50)
00 11	0aaa aaaa	P-ENV LEVEL 2	0 - 100 (-50 - +50)
00 12	0aaa aaaa	P-ENV SUSTAIN LEVEL	0 - 100 (-50 - +50)
00 13	0aaa aaaa	END LEVEL	0 - 100 (-50 - +50)
00 14	0aaa aaaa	P-LFO RATE	0 - 100
00 15	0aaa aaaa	P-LFO DEPTH	0 - 100
00 16	0aaa aaaa	P-LFO MOD SENS	0 - 100
00 17	0aaa aaaa	TVF CUTOFF FREQ	0 - 100
00 18	000a aaaa	TVF RESONANCE	0 - 30
00 19	0000 aaaa	TVF KEYFOLLOW	0 - 14 (-1, -1/2, -1/4, 0, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2)
00 1A	0aaa aaaa	TVF BIAS POINT/DIR	0 - 127 (<1A - <7C >1A - >7C)
00 1B	0000 aaaa	TVF BIAS LEVEL	0 - 14 (-7 - +7)
00 1C	0aaa aaaa	TVF ENV DEPTH	0 - 100
00 1D	0aaa aaaa	TVF ENV VELO SENS	0 - 100
00 1E	0000 0aaa	TVF ENV DEPTH KEYF	0 - 4
00 1F	0000 0aaa	TVF ENV TIME KEYF	0 - 4
00 20	0aaa aaaa	TVF ENV TIME 1	0 - 100
00 21	0aaa aaaa	TVF ENV TIME 2	0 - 100
00 22	0aaa aaaa	TVF ENV TIME 3	0 - 100
00 23	0aaa aaaa	TVF ENV TIME 4	0 - 100
00 24	0aaa aaaa	TVF ENV TIME 5	0 - 100
00 25	0aaa aaaa	TVF ENV LEVEL 1	0 - 100
00 26	0aaa aaaa	TVF ENV LEVEL 2	0 - 100
00 27	0aaa aaaa	TVF ENV LEVEL 3	0 - 100
00 28	0aaa aaaa	TVF ENV SUSTAIN LEVEL	0 - 100
00 29	0aaa aaaa	TVA LEVEL	0 - 100
00 2A	0aaa aaaa	TVA VELO SENS	0 - 100 (-50 - +50)
00 2B	0aaa aaaa	TVA BIAS POINT 1	0 - 127 (<1A - <7C >1A - >7C)
00 2C	0000 aaaa	TVA BIAS LEVEL 1	0 - 12 (-12 - 0)
00 2D	0aaa aaaa	TVA BIAS POINT 2	0 - 127 (<1A - <7C >1A - >7C)
00 2E	0000 aaaa	TVA BIAS LEVEL 2	0 - 12 (-12 - 0)
00 2F	0000 0aaa	TVA ENV TIME KEYF	0 - 4
00 30	0000 0aaa	TVA ENV TIME V_FOLLOW	0 - 4
00 31	0aaa aaaa	TVA ENV TIME 1	0 - 100
00 32	0aaa aaaa	TVA ENV TIME 2	0 - 100
00 33	0aaa aaaa	TVA ENV TIME 3	0 - 100
00 34	0aaa aaaa	TVA ENV TIME 4	0 - 100
00 35	0aaa aaaa	TVA ENV TIME 5	0 - 100
00 36	0aaa aaaa	TVA ENV LEVEL 1	0 - 100
00 37	0aaa aaaa	TVA ENV LEVEL 2	0 - 100
00 38	0aaa aaaa	TVA ENV LEVEL 3	0 - 100
00 39	0aaa aaaa	TVA ENV SUSTAIN LEVEL	0 - 100
Total size		00 00 3A	

Example of RQ1 and DT1 application - - - 1

Obtain Part 2 tone data from the temporary area by sending the following messages.

F0 41 10 16 11 04 01 76 00 01 76 0E F7

*4 - 2 Patch temporary area

*4 - 2 - 1 Patch temporary area (Part 1 - 8)

Offset address		Description	
00 00	0000 00aa	TIMBRE GROUP	0 - 3 (a, b, I, r)
00 01	00aa aaaa	TIMBRE NUMBER	0 - 63 (1 - 64)
00 02	00aa aaaa	KEY SHIFT	0 - 48 (-24 - +24)
00 03	0aaa aaaa	FINE TUNE	0 - 100 (-50 - +50)
00 04	000a aaaa	BENDER RANGE	0 - 24
00 05	0000 00aa	ASSIGN MODE	0 - 3 (POLY 1, POLY 2, POLY 3, POLY 4)
00 06	0000 000a	REVERB SWITCH	0 - 1 (OFF, ON)
00 07	0xxx xxxx	dummy (ignored if received)	
00 08	0aaa aaaa	OUTPUT LEVEL	0 - 100
00 09	0000 aaaa	PANPOT	0 - 14 (R - L)
00 0A	0xxx xxxx	dummy (ignored if received)	
:	:	:	
00 0F	0xxx xxxx	dummy (ignored if received)	
Total size		00 00 10	

＊4-2-2 Patch temporary area (Rhythm Part)

Offset address		Description	
00 00	0XXX XXXX	dummy (ignored if received)	
00 01	0XXX XXXX	dummy (ignored if received)	
00 02	0XXX XXXX	dummy (ignored if received)	
00 03	0aaa aaaa	FINE TUNE	0 - 100 (-50 - +50)
00 04	0XXX XXXX	dummy (ignored if received)	
00 05	0000 00aa	ASSIGN MODE	0 - 3 (POLY 1, POLY 2, POLY 3, POLY 4)
00 06	0XXX XXXX	dummy (ignored if received)	
00 07	0XXX XXXX	dummy (ignored if received)	
00 08	0aaa aaaa	OUTPUT LEVEL	0 - 100
00 09	0XXX XXXX	dummy (ignored if received)	
:	:	:	
00 0F	0xxx xxxx	dummy (ignored if received)	
Total size	00 00 10		

＊4-3 Rhythm part setup area

Offset address	Description	
00 00 00	Rhythm Setup (for Key= 24)	＊4-3-1
00 00 04	Rhythm Setup (for Key= 25)	
00 00 08	Rhythm Setup (for Key= 26)	
00 00 0C	Rhythm Setup (for Key= 27)	
00 00 10	Rhythm Setup (for Key= 28)	
:	:	
:	:	
:	:	
00 02 4C	Rhythm Setup (for Key= 107)	
00 02 50	Rhythm Setup (for Key= 108)	

＊4-3-1 Rhythm setup (for each Key ＝)

Offset address		Description	
00 00	0aaa aaaa	TIMBRE	0 - 127 (i01-i64, r01-r64)
00 01	0aaa aaaa	OUTPUT LEVEL	0 - 100
00 02	0000 aaaa	PANPOT	0 - 14 (R - L)
00 03	0000 000a	REVERB SWITCH	0 - 1 (OFF, ON)
Total size	00 00 04		

＊4-4 Patch memory

Offset address		Description	
00 00	0000 00aa	TIMBRE GROUP	0 - 3 (a, b, i, r)
00 01	00aa aaaa	TIMBRE NUMBER	0 - 63
00 02	00aa aaaa	KEY SHIFT	0 - 48 (-24 - +24)
00 03	0aaa aaaa	FINE TUNE	0 - 100 (-50 - +50)
00 04	000a aaaa	BENDER RANGE	0 - 24
00 05	0000 00aa	ASSIGN MODE	0 - 3 (POLY 1, POLY 2, POLY 3, POLY 4)
00 06	0000 000a	REVERB SWITCH	0 - 1 (OFF, ON)
00 07	0xxx xxxx	dummy	
Total size	00 00 08		

＊4-5 System area

The total number of Partial reserves for 9 parts must be 32 or less.
All Partial reserves must be sent as a package of 9 parts.

Offset address		Description	
00 00	0aaa aaaa	MASTER TUNE	0 - 127 (427.5Hz - 452.6Hz)
00 01	0000 00aa	REVERB MODE	0 - 3 (Room, Hall, Plate, Tap delay)
00 02	0000 0aaa	REVERB TIME	0 - 7 (1 - 8)
00 03	0000 0aaa	REVERB LEVEL	0 - 7
00 04	00aa aaaa	PARTIAL RESERVE (Part 1)	0 - 32
00 05	00aa aaaa	PARTIAL RESERVE (Part 2)	0 - 32
00 06	00aa aaaa	PARTIAL RESERVE (Part 3)	0 - 32
00 07	00aa aaaa	PARTIAL RESERVE (Part 4)	0 - 32
00 08	00aa aaaa	PARTIAL RESERVE (Part 5)	0 - 32
00 09	00aa aaaa	PARTIAL RESERVE (Part 6)	0 - 32
00 0A	00aa aaaa	PARTIAL RESERVE (Part 7)	0 - 32
00 0B	00aa aaaa	PARTIAL RESERVE (Part 8)	0 - 32
00 0C	00aa aaaa	PARTIAL RESERVE (Part R)	0 - 32
00 0D	000a aaaa	MIDI CHANNEL(Part 1)	0 - 16 (1 - 16, OFF)
00 0E	000a aaaa	MIDI CHANNEL(Part 2)	0 - 16 (1 - 16, OFF)
00 0F	000a aaaa	MIDI CHANNEL(Part 3)	0 - 16 (1 - 16, OFF)
00 10	000a aaaa	MIDI CHANNEL(Part 4)	0 - 16 (1 - 16, OFF)
00 11	000a aaaa	MIDI CHANNEL(Part 5)	0 - 16 (1 - 16, OFF)
00 12	000a aaaa	MIDI CHANNEL(Part 6)	0 - 16 (1 - 16, OFF)
00 13	000a aaaa	MIDI CHANNEL(Part 7)	0 - 16 (1 - 16, OFF)
00 14	000a aaaa	MIDI CHANNEL(Part 8)	0 - 16 (1 - 16, OFF)
00 15	000a aaaa	MIDI CHANNEL(Part R)	0 - 16 (1 - 16, OFF)
00 16	0aaa aaaa	MASTER VOLUME	0 - 100
Total size	00 00 17		

When the Reveive channel of the part altered, Reset all controllers and All notes off messages for this part are performed.

Example of RQ1 and DT1 application - - - 2

Set Partial reserve of each part as follows by sending the byte string listed below.

Part 1 8	Parts 3 thru 8 0
Part 2 10	Rhythm part 8

F0 41 10 16 12 10 00 04 08 0A 00 00 00 00 00 00 08 52 F7

*4 - 6 Write Reques

This message simulates write switch on CM - 32L, that is, CM - 32L writes data of each part in the temporary area into internal memory. (Memory must be specified by two bytes addresses.) CM - 32L will inform back of the writing result.
No data in this area can be brought outside world by the use of RQ1 and RQD.

Offset address	Description		
00 00	00aa aaaa	Timbre Write (part 1)	0 - 63 (01 - 64)
00 01	0000 0000		0 (Internal)
00 02	00aa aaaa	Timbre Write	
00 03	0000 0000	(part 2)	
:	:	:	
:	:	:	
00 0E	00aa aaaa	Timbre Write	
00 0F	0000 0000	(part 8)	
01 00	0aaa aaaa	Patch Write (part 1)	0 - 127 (1 - 128)
01 01	0000 0000		0 (Internal)
01 02	0aaa aaaa	Patch Write	
01 03	0000 0000	(part 2)	
:	:	:	
:	:	:	
01 0E	0aaa aaaa	Patch Write	
01 0F	0000 0000	(part 8)	
10 00	0000 00aa	Result	0 - 3 0 = Function Completed 1 = Incorrect Mode 2 = Incorrect Mode 3 = Incorrect Mode

Example of RQ1 and DT1 application - - - 3

Direct CM - 32L to write data of Part 3 in the temporary area into ≠76 by sending the byte string listed below.

F0 41 10 16 12 40 01 04 4B 00 70 F7

*4 - 7 All Parameters Reset

All parameters will be initialized by sending data to this address.
No data in this area can be brought outside world through MIDI exclusive message such as RQ1 and RQD.

Address Map

Address	Block	Sub Block	Reference
02 00 00	Timbre Temp. (Basic Ch)	Common	4-1-1
		Partial 1	4-1-2
		Partial 2	
		Partial 3	
		Partial 4	
03 00 00	Patch Temp. (Unit#)	Part 1	4-2
		Part 2	
		:	
		Part 8	
		Part R	
03 01 10	Rhythm Setup Temp(Unit#)	Note# 24	4-3-1
		Note# 25	
		:	
		Note# 107	
		Note# 108	
04 00 00	Timbre Temp. (Unit#)	Part 1	4-1
		Part 2	
		:	
		Part 7	
		Part 8	
05 00 00	Patch Memory	# 1	4-4
		# 2	
		:	
		#127	
		#128	
08 00 00	Timbre Memory	# 1	4-1
		# 2	
		:	
		# 63	
		# 64	
10 00 00	System Area		4-5
40 00 00	Write Request		4-6
7F xx xx	All Parameters Reset		4-7

LA SOUND MODULE
Model CM − 32L

MIDI Implementation Chart

Date : Apr. 18. 1989
Version : 1.00

Function ···		Transmitted	Recognized	Remarks
Basic Channel	Default	×	2 − 10	
	Changed	×	×	
Mode	Default	×	3	
	Messages	×	×	
	Alterd	*********	×	
Note Number		×	0 − 127	
	True Voice	*********	12 − 108	
Velocity	Note ON	×	○ v = 1 − 127	
	Note OFF	×	×	
After Touch	Key's	×	×	
	Ch's	×	×	
Pitch Bender		×	○	
Control Change	1	×	○	Modulation
	2 − 5	×	×	
	6	×	*	Data Entry
	7	×	○	Volume
	8, 9	×	×	
	10	×	○	Pan
	11	×	○	Expression
	12 − 63	×	×	
	64	×	○	Hold 1
	65 − 99	×	×	
	100, 101	×	* (0)	RPN LSB, MSB
	102 − 120	×	×	
	121	×	○	Reset All Controllers
Prog Change		×	○ 0 − 127	
	True #	*********	0 − 127	
System Exclusive		○	○	
System Common	Song Pos	×	×	
	Song Sel	×	×	
	Tune	×	×	
System Real Time	Clock	×	×	
	Commands	×	×	
Aux Message	Local ON/OFF	×	×	
	All Notes OFF	×	○ (123 − 127)	
	Active Sense	×	○	
	Reset	×	×	
Notes		* RPN = Registered Parameter Number RPN # 0 : Pitch Bend Sensitivity The value of parameter is to be determined by entering data.		

Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO

○ : Yes
× : No

■ *Specifications*

CM-32L LA Sound Module

Sound source :
LA System
Maximum voices : 32

Number of sounds :
Sound part : 128
Rhythm part : 30 and 33

Connectors :
OUTPUT jacks - L(mono), R
Headphone jack
MIDI connectors - IN, OUT and THRU
DC IN jack

Power supply :
9V DC (Supplied by ACB-Series AC adaptor)

Current consumption :
600mA (at 9V DC)

Dimensions :
284 (W) × 239 (D) × 46 (H)mm
11-3/16" × 9-1/4" × 1-2/3"

Weight :
1.7 kg/3 lb 12oz

Accessories :
AC Adaptor
MIDI cable (1 pc.)
Connecting cord (2 pcs.)
Owner's Manual
Guidebook for MIDI

* The specifications for this product are subject to change without prior notice, in the interest of improvement.

Information

- Please use this AC adaptor only with the specified device.
- Please use the AC Adaptor of an appropriate voltage (120, 220 or 240) depending on the voltage system in your country.
- When the device is not used for a long period, be sure to disconnect the AC adaptor (Power Supply Unit) from the wall outlet.
- When you need repair service, call your local Roland Service Station as shown below or the authorized Roland distributer in your country.

U. S. A.

Roland Corp US
7200 Dominion Circle
Los Angeles, CA. 90040-3647
U. S. A.
☎ (213) 685-5141

CANADA

Roland Canada Music Ltd.
(Head Office)
13880 Mayfield Place
Richmond B. C., V6V 2E4
CANADA
☎ (604) 270-6626

Roland Canada Music Ltd.
3469 rue Ashby,
St Laurent,
Quebec H4R 2C1
CANADA
☎ (514) 335-2009

Roland Canada Music Ltd.
Unit B-12, 1515 Matheson Blvd
Mississauga, Ontario L4W 2P5
CANADA
☎ (416) 625-4880

AUSTRALIA

Roland Corporation
(Australia) Pty. Ltd.
(Head Office)
38 Campbell Avenue
Dee Why West, NSW 2099
AUSTRALIA
☎ (02) 982-8266

Roland Corporation
(Australia) Pty. Ltd.
(Melbourne Office)
50 Garden Street
South Yarra, Victoria 3141
AUSTRALIA
☎ (03) 241-1254

NEW ZEALAND

Roland Corporation (NZ) Ltd.
97 Mt. Eden Road, Mt. Eden,
Auckland 3
NEW ZEALAND
☎ (09) 398-715

UNITED KINGDOM

Roland (UK) Ltd.
Amalgamated Drive
West Cross Centre, Brentford,
Middlesex TW8 9EZ.
UNITED KINGDOM
☎ (01) 568-4578

WEST GERMANY

Roland Elektronische
Musikinstrumente
Handelsgesellschaft mbH.
Oststrasse 96,
2000 Norderstedt
WEST GERMANY
☎040/52 60 09 25

BELGIUM/HOLLAND/ LUXEMBOURG

Roland Benelux N. V.
Houtstraat 1
B-2431 Oevel-Westerlo
BELGIUM
☎014-58 45 39

DENMARK

Roland Scandinavia A/S
Langebrogade 6, 1937,
DK-1023 Copenhagen K.
DENMARK
☎ (01) 95 31 11

SWEDEN

Roland Scandinavia A/S
Swedish Sales Office
DanvikCenter 28A, 2tr.
S-131 30 Nacka,
SWEDEN
☎08-702 00 20

NORWAY

Benum Music A/S
Haakon den godes Vei 14
N-0319 Oslo 3,
NORWAY
(Box 145 Vindern, N-0319
Oslo 3 NORWAY)
☎02 141266

FINLAND

OY Musiikki Fazer Musik AB
Takomotie 3
00380 Helsinki 38,
FINLAND
☎05 56551

ITALY

Roland Italy S. P. A.
Via Gallarate 58
20151 Milano
ITALY
☎02-3086849

SWITZERLAND

Musitronic AG
Gerberstrasse 5, CH-4410
Liestal
SWITZERLAND
☎061/921 16 15

FRANCE

Musikengro
102, Avenue Jean-Jaures
69367 Lyon Cedex 07
FRANCE
☎ (7) 858-54 60

Musikengro
(Paris Office)
Centre Region Parisienne
41 rue Charles-Fourier,
94400 Vitry s/Seinc
FRANCE
☎ (1) 4680 86 62

SPAIN

Victronic S. A.
Bolivia 239
08020 Barcelona
SPAIN
☎34-307 47 12

AUSTRIA

E. Dematte & Co.
Nue-Rum Siemens-Strasse 4
A-6021 Innsbruck box 591
AUSTRIA
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